MEMORANDUM State of Alaska

TO:
Robert Burkett
Chief of Technology & Development
FRED Division - Juneau
Department of Fish and Game

DATE: January 9, 1986

FILE NO:

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FROM:

SUBJECT:

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Brief Project Proposal

Chinook Salmon Fry Stocking of Redoubt Lake

In conjunction with the established lake enrichment project, I would like to propose a project to stock hatchery produced chinook salmon fry into Redoubt Lake. This stocking would take place within the first quarter mile reach of the principle inlet stream which enters the lake at the extreme eastern end (attached map). This stream is the largest lake inlet (both in length and total discharge) and is currently utilized as a rearing area for indigenous coho salmon and Dolly Varden char juveniles.

By stocking the fry immediately upstream from the lake this would allow the fish to utilize either the inlet stream or the lake littoral and pelagic zones as a rearing area depending on the availability of food forage organisms. Preliminary observations of chinook salmon fry stocked in Osprey and Banner Lake (D. Crone personal comm.) indicate that in a lake with an existing Dolly Varden population (Osprey) the fry appeared to feed predominately in the littoral areas of the lake and in a fishless lake (Banner) the fry were observed actively feeding in the limnetic area at a relatively small size only a short period of time after stocking.

To completely evaluate this project and provide an adequate amount of zooplankton for fry feeding in the lake it will be necessary to continue the fertilization of the lake and the evaluation program at the present level. By continuing the existing lake enrichment program, information will continue to be collected on the total smolt and adult production and the influences of these enhancement projects on the zooplankton populations and limnology of the lake. In addition it will be necessary to collect monthly samples from the stocked fry to determine their rearing distribution and feeding behavior within the lake and inlet stream.

During the monthly fry sampling the ADF&G-FRED and USFS weir personnel will monitor growth rates, rearing juvenile distribution and collect stomach samples (gastric lavage) for analyses. The ADF&G-FRED Limnology Laboratory currently possesses the ability to perform these stomach content analyses.

Justification

The current lake enrichment project at Redoubt Lake has been operating continously since 1982. The results of the fertilizer applications indicate an increase of zooplankton populations in the fertilized areas and that the lake production for sockeye is fry limited. This fry limitation is due primary to the low adult escapements observed during the study period. Through the continuation of the fertilizer applications and existing evaluation program it will be possible to increase the zooplankton populations in the areas targeted for fry stocking and evaluate the results of these fry additions.

Pathology samples have been collected and analyzed for adult sockeye salmon during 1985. The results (attached) of these analyses indicate that the existing wild sockeye populations have a relatively low incidence of IHNV. The results of these analyses will be a major consideration on the decision to stock chinook fry in a lake which currently supports a wild sockeye salmon population.

Due to the lack of a central incubation facility for sockeye salmon, the experimental nature of the in-lake incubation and the chinook fry production emphasis within the region, the potential for significant sockeye fry additions to this lake from hatchery production does not exist in the near future. Therefore, this chinook fry stocking project could provide an alternative to increasing the total fish production from this lake in the immediate future.

The fish produced from this project will benefit a wide variety of users by providing a greater number of harvestable fish. The adult chinook produced from this project will directly add fish to the established sockeye and coho subsistence and sport fishery at the outlet of Redoubt Lake, the sport fishing troll fleet in Sitka Sound, and the commercial troll fleet.

Prior to the implementation of this project, a discussion of concerns needs to be addressed. These are:

1. The pathology and genetic policies of stocking non-indigenous chinook fry in a lake which presently supports wild coho and sockeye populations.

2. The concern that the stocked chinook fry would displace and compete with the existing coho juveniles for rearing areas and food organisms.

3. The concern that the stocked chinook fry will be able to feed effectively on the pelagic zooplankton poulation which are predominately cladocerans.

4. It will also be essential to maintain the current fertilization effort to continue enhancing the lake zooplankton levels to support the additional fry.

Attachment

cc: Harold Heinkel
Mike Haddix
Jeff Koenings